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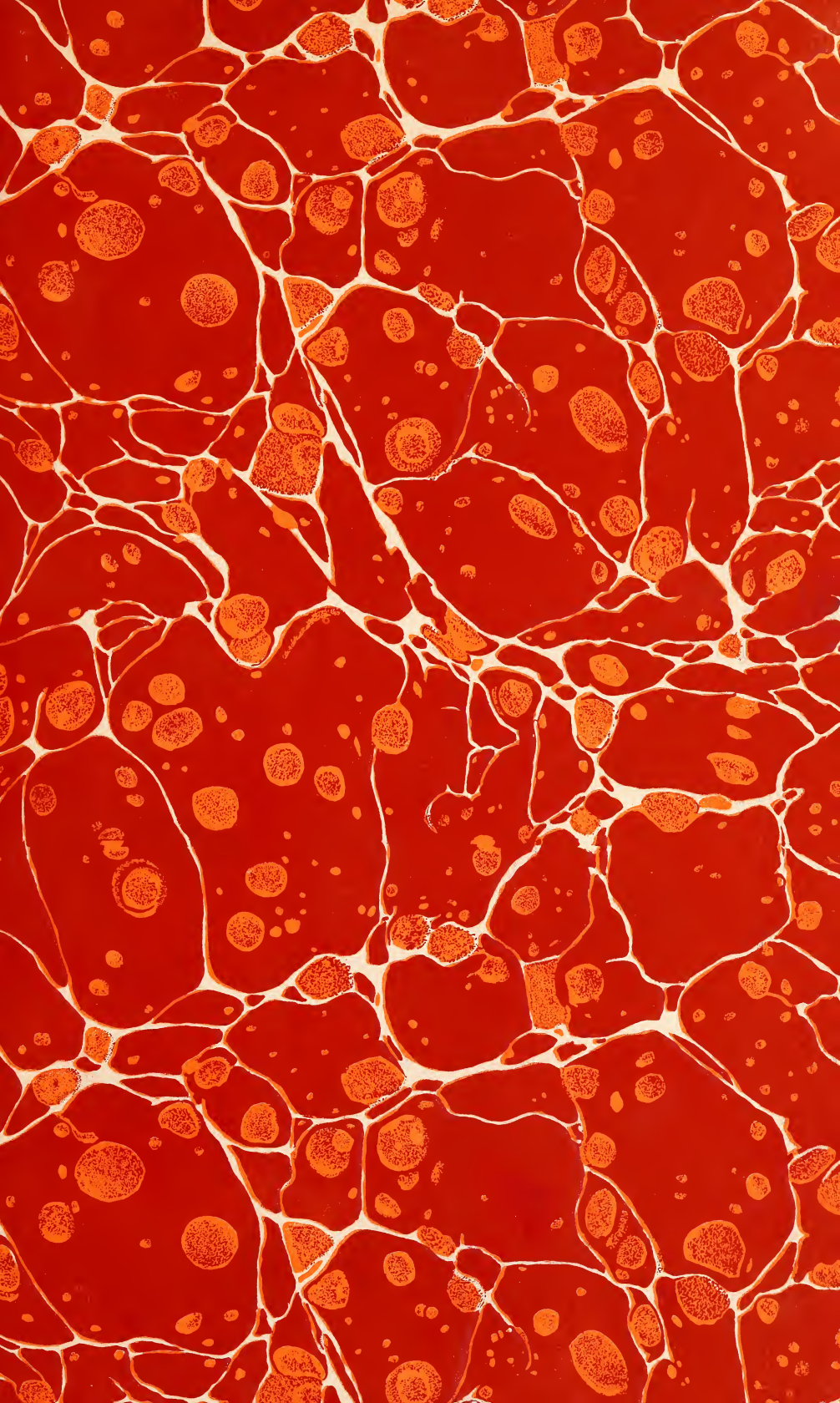
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U. S. Department of Agriculture, ^{Jan 1907}

DIVISION OF ENTOMOLOGY, Department of Agriculture

INVESTIGATIONS IN ECONOMIC ORNITHOLOGY.

Circular to the Keepers of Lights:

THE Department of Agriculture wishes to ascertain the whereabouts of all our birds during the winter season, and the times of leaving their winter homes; to determine, if possible, the number and extent of the chief avenues of migration in North America, and the average rate of speed at which the different species travel; to find out the dates of their appearance at and disappearance from at least a thousand localities, both in spring and fall, for a period of years; and to map out the breeding areas of every species which rears its young in North America, north of Mexico.

Birds are known to migrate with great regularity. Still, the exact date of the arrival of a given species at a given locality varies somewhat from year to year, according to the advancement of the season and the state of the weather. For example, severe storms, gales of wind, and protracted periods of unusually high or low temperature are among the atmospheric conditions that are known to exert marked effects upon their movements.

The time of a bird's appearance at a certain place does not depend so much upon the weather *at that place*, as upon the weather *at some distant point* (perhaps several hundred miles away) in the direction *from which* it comes.

Most birds migrate chiefly by night. In clear weather they fly high, often from one to two miles above the country over which they are passing, thus obtaining an unobstructed view of a large extent of territory, which enables them to lay out their course by definite land-marks. During dark nights, particularly in foggy weather, they often lose their way, become confused, and fly directly toward any light that may chance to lie within the field of vision. Thus every year many thousands dash themselves to death against Light-houses and Light-ships.

The great majority of birds migrate by definite routes, following the same course season after season. These avenues of migration are most strongly marked in aquatic, marsh and river-dwelling species. Some kinds follow in autumn a different course from that which they take in the spring. In nearly all birds the same individual always returns to the same locality to breed.



Through the kindly co-operation of the Department of Marine of Canada, and of the Light-house Boards of the United States and Newfoundland, blank schedules have been distributed to the Keepers of Light-houses, Light-ships, and Beacons throughout the whole of North America. Several hundred of these schedules have already been filled and returned, and the Stations from which they have been received extend from Sombrero Key (one of the Florida Reefs), in the South, to Nova Scotia, Sable Island, Cape Breton, Prince Edward Island, the Magdalens, Newfoundland, Belle Isle, and Greenly Island off Labrador, in the North.

In thanking the many intelligent Light-keepers who have had the kindness to act as Migration Observers during the past two years, the hope is expressed that they, together with many others, will volunteer services for the coming season.

In addition to the records concerning the movements of Birds, information upon the following subjects will be thankfully received:

Meteorological Phenomena.

The Department desires information upon—

1. The direction and force of the wind.
2. The direction, character, and duration of storms.
3. The general conditions of the atmosphere, including rain-fall.
4. The succession of marked warm and cold waves, including a record of all sudden changes of temperature.

Contemporary and Correlative Phenomena.

The Department desires that the data under this head be as full and complete as possible, and requests exact information upon—

1. The date at which the first toad is seen.
2. The date at which the first frog is heard.
3. The date at which the first tree-toad or "peeper" is heard.
4. The dates at which certain mammals and reptiles enter upon and emerge from the state of hibernation.
5. The dates at which various insects are first seen.
6. The dates of flowering of various plants.
7. The dates of the leafing and falling of the leaves of various trees and shrubs.
8. The dates of the breaking up and disappearance of ice in rivers and lakes in spring, and of the freezing over of the same in the fall.

All communications should be addressed—

DR. C. HART MERRIAM,
Ornithologist.

INSTRUCTIONS TO LIGHT-KEEPERS.

Two blank schedules accompany this circular :

The one entitled "BIRDS STRIKING THE LIGHT" is to be used only in case birds actually do strike. Keepers are particularly requested to send the heads and wings of small birds to the Department for identification, always stating the date when the birds struck. Such specimens may be sent post-free in official return penalty envelopes.

The other schedule, entitled "BIRDS OBSERVED AT STATION," refers to all birds seen from or in the immediate neighborhood of the Station, and should be filled during the progress of the migration.

In the *first* column should be stated the exact date when each kind of bird was first seen. This entry should be made on the day the bird arrives—not from memory afterwards (general statements, such as "late in March," "early in April," etc., are of no value).

In the *second* column should be stated, with as much exactness as possible, the number of each kind of bird observed during the day it was first seen.

In the *third* column should be stated the date when the same kind of bird was next seen—whether this happens on the very next day, the next week, or not till a month later.

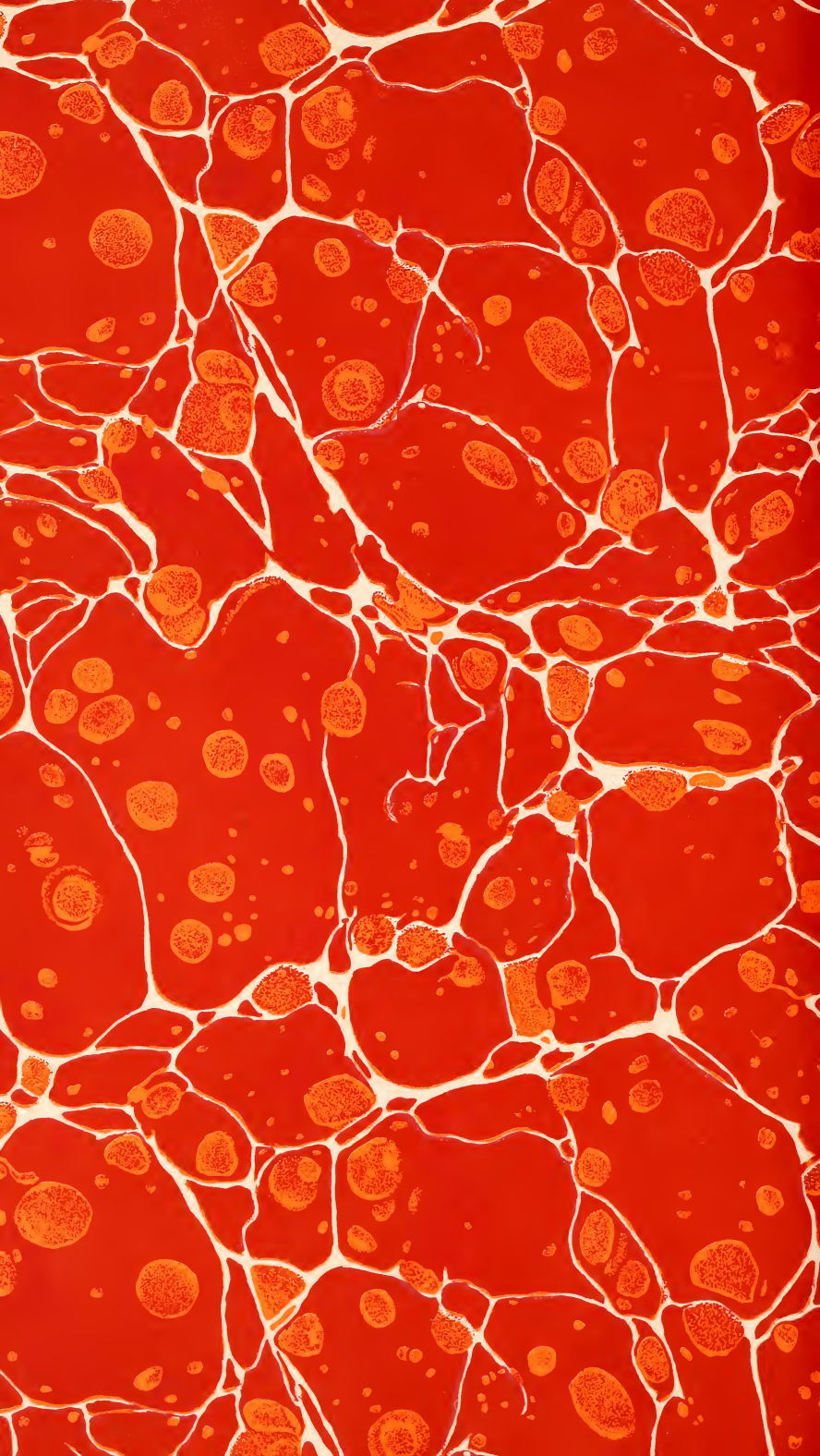
In the *fourth* column should be stated the date when the bird becomes common. Some birds come in a body, and are common from the day of their first arrival, while others straggle along and are not common for a month or more; and others still are never common.

In the *fifth* column should be stated the last date when the bird was observed. In the SPRING MIGRATION this column will remain vacant in those species which breed in the neighborhood, as it can be filled only when *all* the individuals go North. In the FALL MIGRATION it should be filled in those species which pass farther South, but must remain vacant in those which spend the winter in the vicinity of the Station.

In the *sixth* column should be stated whether the species is abundant, common, tolerably common, or rare.

In the *seventh* column it is necessary only to say *yes* or *no*.





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(20 Stat. 171, June 15, 1878.)

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